

DOBROV, N. N.
12
ACCESSION NR: AT4042681

S/0000/63/000/000/0185/0188

AUTHOR: Zhukov-Verezhnikov, N. N.; Mayskiy, I. N.; Yazdovskiy, V. I.; Pekhov, A. P.; Rybakov, N. I.; Tribulev, G. P.; Saksonov, P. P.; Dobrov, N. N.; Antipov, V. V.; Kozlov, V. A.; Vyotskiy, V. G.; Mishenko, B. A.; Rybakova, D. K.; Parfenov, G. P.; Pantyukhova, V. V.; Yudin, Ye. V.; Aniskin, Ye. D.

TITLE: The evaluation of the biological effectiveness of space-flight factors with the aid of lysogenic bacteria

SOURCE: Konferentsiya po aviatsionnoy i kosmicheskoy meditsine, 1963. Aviatsionnaya i kosmicheskaya meditsina (Aviation and space medicine); materialy* konferentsii. Moscow, 1963, 185-188

TOPIC TAGS: lysogenic bacteria, biological sensor, radiation detector, bacteriophage, phage, vibration, irradiation/Vostok III, Vostok IV

ABSTRACT: Lysogenic bacteria, E. coli K-12 (λ), was carried on spaceships

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Vostok III and Vostok IV as a biological sensor. The advantages of lysogenic bacteria as biological sensors stem not only from their extreme sensitivity to various types of radiation, but also from the fact that induced changes are directly proportional to the dose of irradiation. In addition, E. coli was subjected to the combined effects of radiation and vibration in ground experiments. Vibration was produced by means of a vibrator with frequencies of 35, 70, and 700 cps, an amplitude ranging from 0.4 to 0.005 mm with a load equal to 10 g, for periods of 15, 30, and 60 min. Co⁶⁰ in doses of 100 r at a rate of 21 r per min served as a source of radiation. Lysogenic bacteria carried on space-ships Vostok III and Vostok IV revealed induction of genetic changes produced by space-flight factors which was indicated by a significant increase in the number of phage particles. The induced effect was more pronounced on Vostok III than on Vostok IV. Forty-eight hours after its return to earth, the bacteria carried by Vostok III had produced 4.6 times as many phage particles as controls which had remained on earth. Ground experiments with vibration indicate that the combined vibration and gamma irradiation, followed by a second exposure to vibration, double the biological effectiveness of gamma rays.

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However, when the bacteria is subjected to only a single dose of vibration following irradiation, there is no increase in the number of phage particles as compared to samples which were exposed to irradiation alone. This fact indicates that under space flight conditions vibration sensitizes the lysogenic bacteria to the effect of ionizing radiation. This as yet hypothetical explanation should be substantiated by additional experiments.

ASSOCIATION: none

SUBMITTED: 27Sep63

ENCL: 00

SUB CODE: LS

NO REF SOV: 000

OTHER: 000

Card 3/3

L 18080-63 EWT(l)/EWT(m)/FCC(w)/BDS/EEC-2/ES(a)/ES(j)/ES(c)/ES(k)/
ES(v) AMD/AFFTC/ASD/AFMDC/ESD-3/APGC Pb-l/P1-l/Po-l/Pe-l/Pq-l A/RB/AR/K/DD
ACCESSION NR: AP3005662 S/0248/63/000/008/0013/0020

AUTHOR: Saksonov, P. P.; Antipov, V. V.; Dobrov, N. N. 95

TITLE: Achievements and aims in the field of cosmic
radiobiology ✓

SOURCE: AMN SSSR. Vestnik, no. 8, 1963, 13-20

TOPIC TAGS: radiobiological problem, space flight, cosmic radiation,
relative biological efficiency, proton, alpha particle, chromosome
aberration, vibration, X-irradiation, radiation protection

ABSTRACT: This article is a survey of radiobiological problems of
space flight based on 16 Russian and foreign sources. With cosmic
radiation in the form of radiation belts and sun flares presenting
many difficulties, the relative biological efficiency of protons,
alpha particles, and heavy nuclei together with other flight factors
require considerable study. The combined action of cosmic radiation
and other flight factors on biological specimens are being investi-
gated in laboratories and under actual flight conditions. Various
biological specimens have been taken aloft by Soviet and American

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astronauts for study of life processes and radiation effects. In the laboratory white mice have been subjected to vibrations of 70 hz/15 min and X-rays of 100 r to determine the frequency of chromosome aberrations. Effective physical, biological, and pharmacological means of radiation protection need to be developed. Orig. art. has: 2 tables.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 06Sep63

ENCL: 00

SUB CODE: AM

NO REF SOV: 011

OTHER: 005

Card 2/2

ANTIPOV, V. V.; VYSOTSKIY, V. G.; DAVYDOV, B. I.; DOBROV, N. N.; MOROZOV, V. S.; MURIN, G. F.;
NIKITIN, M. D.; SAKSONOV, P. P.

"Some problems in providing radiation safety in space flight."

report presented at the 5th Intl Space Science Symp, Florence, 12-16 May 64.

ANTIPOV, V.V.; ROBEV, N.N.; SILONOV, P.V.

Basic trends in studying the biological action of cosmic radiation
and in developing means for radiation protection. *Izvest. Kosm.
biol.* 3:113-124 '64. (U.S.S.R. 17:6)

SISAKYAN, N.M.; PARIN, V.V.; ANTIPOV, V.V.; DOBROV, N.N.; SAKSONOV, F.P.

Some conclusions and future development of the radiobiological
research in space. Izv. AN SSSR. Ser. biol. no.3:341-351 My-
Je '64. (MIRA 17:5)

ACCESSION NR: AP4039714

S/0205/64/004/003/0344/0348

AUTHOR: Voly*nnkin, Yu. M.; Parin, V. V.; Antipov, V. V.; Guda, V. A.; Dobrov, N. N.; Nikitin, M. D.; Saksonov, P. P.

TITLE: Radiation safety measures during flights by Soviet cosmonauts in Vostok space ships

SOURCE: Radiobiologiya, v. 4, no. 3, 1964, 344-348

TOPIC TAGS: manned space flight, Vostok, cosmic radiation, galactic radiation, radiation dosimetry, telemetry, radiobiology

ABSTRACT: Radiation safety measures for cosmonauts in the Vostok series have involved measurements of the integral doses within cabins, conducting biological dosimetric probes of cosmic radiation, and the use of antiradiation pharmaceuticals during emergency situations. The results of radiobiological investigations conducted during the Vostok flights agree with those of other physical probes and indicate that the radiation hazards to be encountered during short space flights are minimal. Clinical examinations of cosmonauts following Vostok flights showed no deleterious effects of cosmic radiation.

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ACCESSION NR: AP4039714

ASSOCIATION: none

SUBMITTED: 29Dec63

DATE ACQ: 19Jun64

ENCL: 00

SUB CODE: PH, LS

NO REF SOV: 008

OTHER: 000

Card 2/2

L 38560-65

ACCESSION NR. AP5009651

diet and also irradiated in plexiglas cages, had a 90% mortality rate in the same
part of the body. Some of the and chemical defenses for a long time
the same level of resistance. Results of the study
the same level of resistance.

1.5.1.1.1.1

SUBMITTED: 1965

ENCL: 00

SUB TYPE: 1.5.1.1.1.1

NO REF: 1.5.1.1.1.1

OTHER: 006

ATT: 006

Card

2/2

ZHUKOV-VEREZHNIKOV, N.N.; RYBAKOV, N.I.; KOZLOV, V.A.; SAKSONOV, P.P.;
DOBROV, N.N.; ANTIPOV, V.V.; PODOPLELOV, I.I.; PARFENOV, G.P.

Summary of microbiological and cytochemical studies on "Vostok"
spaceships. Probl. kosm. biol. 4:261-269 '65. (MIRA 18:9)

SAKSONOV, P.P.; ANTIPOV, V.V.; DOBROV, N.N.; SHASHKOV, V.S.; KOZLOV, V.A.;
PARSHIN, V.S.; DAVYDOV, B.I.; RAZGOVOROV, B.L.; MOROZOV, V.S.;
NIKITIN, M.D.

Prospects for pharmacochemical protection against radiation
injury in space flight. Probl. kosm. biol. 4:119-126 '65.
(MIRA 18:9)

MOROZOV, V.S.; SHASHKOV, V.S.; DAVYDOV, B.I.; ANTIPOV, V.V.; SAKSONOV,
P.P.; DOBROV, N.N.

Modeling radiation conditions during solar flares on the trajectory of the flight around the moon. Probl. kosm. biol. 4:701-708 '65. (MIRA 18:9)

ZHUKOV-VEREZHNİKOV, N.N.; VOLKOV, M.N.; RYBAKOV, N.I.; SAKSONOV, P.P.;
KOZLOV, V.A.; KONSTANTINOV, P.A.; ANTIPOV, V.V.; DOEROV, N.N.;
ANISKIN, Ye.D.

New ways of studying chemical protection against genetic changes.
Probl. kosm. biol. 4:445-450 '65. (MIRA 18:9)

RAZGOVOROV, B.L.; MOROZOV, V.S.; SNASHKOV, V.S.; ANTIPOV, V.V.; ~~DOBROV~~
~~N.N.~~; KONNOVA, N.I.; L'VOVA, T.S.; SAKSONOV, P.P.

Effect of screening of separate parts of the animal body on
the change in radiation reaction following action of gamma
rays and high-energy protons. Probl. kosm. biol. 4:411-429 '65.
(MIRA 18:9)

ANISHOV, V.; DOBROV, N.; NIKITIN, M.; SAKSONOV, P.

Radiation barrier on the way to the moon. Av. i kosm. 48
no.12:26-28 D '65. (MIRA 28:11)

L 23976-66 EWT(1)/EWT(2)/FCC/EWA(2) SCIB DD/RS/CR

ACC NR: AT6003847 SOURCE CODE: UR/2865/65/004/000/0119/0126

AUTHOR: Saksonov, P. P.; Antipov, V. V.; Dobrov, N. N.; Shashkov, V. S.;
Kozlov, V. A.; Parshin, V. S.; Davydov, B. I.; Razgovorov, B. L.;
Morozov, V. S.; Nikitin, M. D.

ORG: none

TITLE: Perspectives of pharmacochemical protection from radioactive damage during cosmic flights

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 119-126

TOPIC TAGS: astronaut, space medicine, radiation biologic effect, antiradiation drug, biologic acceleration effect, mouse, experiment animal, space physiology, closed ecology system, space flight

ABSTRACT: The authors consider cosmic radiation a real danger for astronauts, particularly during long flights. The work is a survey on existing radioprotectors and a general discussion of biologic conditions in cosmic flight, future research, and requirements for radioprotectors. The present chemical compounds, Mercamine HCL, its salicylate and disulfide, and AET appear sufficiently effective for clinical use against

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ACC NR: AT6003847

X or gamma rays. Laboratory tests on mice showed that some compounds of the aminothiols series (cystamine, cysteamine, serotonin, AET) exerted significant protective effect in proton irradiation of 600 and 120 Mev. In the search for radioprotectors, other factors affecting the astronaut must also be taken into account, such as weightlessness, vibration, acceleration and changes in pressure. Tests on laboratory animals subjected to such conditions prior to irradiation showed no effect on radiation sickness, but vibration after irradiation was apt to prolong the sickness. Some of the radioprotectors tested in mice and dogs had an adverse effect on stability of the organism under vibration and acceleration. The authors call for studies to establish a stable ecologic system in the cabin which can accompany the astronaut on long trips, for models simulating cosmic flight conditions particularly in regard to radiation dose, and for radioprotective compounds to be compatible with all these conditions. Orig. art. has: none.

SUB CODE: 06, 32/ SUBM DATE: none/ ORIG REF: 040/ OTH REF: 028

Card 2/2 *W*

L 14295-66 EWT(m)/EPF(n)-2 3G/RD

ACC NR: AT6003878

SOURCE CODE: UR/2865/65/004/000/0445/0450

AUTHOR: Zhukov-Verezhnikov, N. N.; Volkov, M. N.; Rybakov, N. I.; Saksonov, P. P.;
Kozlov, V. A.; Konstantinov, P. A.; Antipov, V. V.; Dobrov, N. N.; Aniskin, Ye. D.

ORG: none

TITLE: New ways of studying chemical protection against genetic changes ^{19,44,55} B2
B+1

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 445-450

TOPIC TAGS: bacteria, x ray irradiation, bacterial genetics, chemical agent

ABSTRACT: Aminoethiols and some pyrimidine analogs were tested for their ability to block development of infectious phage from prophage after induction of E. coli K-12 (λ) with x-rays. Doses with a previously established non-toxic effect (0.05% concentration) were used. The desired chemical preparation was added to a bacterial culture diluted in a physiological medium. Experimental and control samples were subjected to x-ray irradiation (dose, 15,000 r) and then cultured on agar. The number of induced phage particles in irradiated samples with and without each preparation was then compared. 2-Mercaptopropylamine hydrochloride was

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L 14295-66

ACC NR: AT6003878

most effective; cultures treated with it produced 119 times fewer phage particles than control samples. Other good inhibitors of induced phage formation were 2-(gamma-aminopropyl) disulfide dihydrobromide, sodium diethyldithiocarbamate and ammonium dithiocarbamate, which reduced phage production 76.3—70.1 times. Less effective were the salts of β -mercaptoethylamine tested: 2-mercaptoethylamine hydrobromide, 2-mercaptoethylamine disulfide hydrochloride, 2-mercaptoethylamine hydroiodide, and 2-mercaptoethylamine hydrochloride.

The experimental data show the essential connection between the chemical structure of the tested preparations and their ability to block the development of infectious phage. The antigenetic effect of β -mercaptoethylamine preparations is determined by their acid radicals as well as by their base. It may be possible to obtain even more effective preparations of this compound by forming salts with other acids. The failure of 3- β -aminoethylisothiuronium hydrobromide to produce an antigenetic effect is especially interesting because in previous experiments this compound decreased the death rate of animals subjected to a lethal radiation

dose by 70-100%. Orig. art. has: 1 table. [ATD PRESS: 4091-F]
 SUB CODE: 06 / SUBM DATE: none / ORIG REF: 013 / OTH REF: 003
 Card 2/2

L 14294-66

.ACC NR: AT6003821

tained in the second generation. However, preparation P-46 completely removed the injurious radiation effect in that generation. Experimental data indicate the possibility of partially or completely removing the depressing effect of β -radiation on plants with the help of physiologically active compounds. Orig. art. has: 4 tables. [ATD PRESS: 4091-F]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 004 / OTH REF: 005

OC
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L 14291-66 EWT(m)/ETC(F)/EPF(n)-2/ENG(m) GG/RD
ACC NR: AT6003875 SOURCE CODE: UR/2865/65/004/000/0411/0429

AUTHOR: Razgovorov, B. L.; Morozov, V. S.; Shashkov, V. S.; Antipov, V. V.;
Dobrov, N. N.; Konnova, N. I.; Lvova, T. S.; Saksonov, P. P. 65
341

ORG: none

TITLE: Effect of screening individual parts of the body of animals on changes in radiation reaction on exposure to gamma rays and high-energy protons

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 411-429

TOPIC TAGS: radiation shielding, RBE, rat, animal physiology, gamma irradiation, cobalt, radioisotope, proton, irradiation, radiation biologic effect

ABSTRACT: Previous experiments showed that screening of individual organs or parts of the body during large doses of x-rays or gamma rays can change both the degree of radiation sickness and the number of deaths. In this work experiments were conducted to determine the effect of screening 19,44,55
during irradiation of animals with gamma rays and 120-Mev protons.

White rats of both sexes were used. Co⁶⁰ gamma irradiation with dose power of 15.5 r/min was used. Proton irradiation was conducted through Card 1/4

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L 14291-66

ACC NR: AT6003875

lead-shielded polyethylene blocks to lower the dose (dose power 60 ± 10 rad/min). During gamma irradiation, parts of the body were screened with steel plates (15 cm thick) of different widths. Plexiglas blocks 12—15 cm thick, which almost completely blocked the proton flux from the screened part, served as shields during proton irradiation. The biological effect of radiation under these conditions was determined by the survival rate of animals during a 30-day period after irradiation. Localized shielding during gamma irradiation of rats in a dose of 930 rad produced a definite increase in the survival rate, which was most effective during screening of the abdomen (80% survival rate as compared with 6% in the control). It was concluded that screening of the abdomen lowers the mortality index to the greatest degree and also is most effective in easing the course of radiation sickness and lessening the degree of leukopenia.

In a second series of experiments, the abdomens of rats were shielded with plexiglas blocks of different widths during irradiation with protons in the following dose ranges: 800—1050 rad and 1100—1300 rad, and with gamma rays in doses of 930, 1100, and 1400 rad. It was found that screening the abdomen with a block 6 cm wide during proton irradiation with

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L 14291-66

ACC NR: AT6003875

800—1050 rad increased the survival rate to 86.4% (as compared with 19.4% in the control). A high survival rate (96.7—100%) was also observed when the abdomen was screened with blocks of various widths during gamma irradiation (930 rad). Screening of the abdomen during proton irradiation also prevented the development of severe gastrointestinal disease in many cases and caused rats to lose less weight. Experimental animals recovered weight more quickly and even exceeded initial weight levels. Weight changes during gamma irradiation followed the same pattern.

Preliminary experiments were also conducted to show the effect of screening under the combined influence of protons and acceleration or vibration. Results showed that neither 30 min of acceleration (10g) nor 1 hr of vibration (700 cps, amplitude 0.005 min) altered the effectiveness of screening during proton irradiation (doses 750—1100 rad and 1050—1300 rad, respectively). Furthermore, it was found that the effectiveness of screening the abdomen increases with increased radiation dose. There is not yet any adequate explanation of the screening effect although it may be connected with retention by the organism of undamaged tissue sections.


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ACC NR: AT6003875

Orig. art. has: 5 figures and 4 tables. [ATD PRESS: 4091-F]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 011 / OTH REF: 010


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L 14245-66 FSS-2/EWT(1)/EWA(j)/FS(v)-3/EEC(k)-2/EWA(d)/T/EWA(b)-2 SCTB TT/DD/JK/RD/
ACC NR: AT6003860 GW SOURCE CODE: UR/2865/65/004/000/0261/0269

AUTHOR: Zhukov-Verezhnikov, N. N.; Rybakov, N. I.; Kozlov, V. A.; Saksonov, P. P.;
Dobrov, N. N.; Antipov, V. V.; Podoplelov, I. I.; Parfenov, G. P.

ORG: none

TITLE: Results of microbiological and cytological investigations conducted
during the flights of "Vostok" type vehicles

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii,
v. 4, 1965, 261-269

TOPIC TAGS: bacteria, genetics, bacterial genetics, gamma irradiation, cobalt,
radioisotope, microbiology, cytology, space biologic experiment, radiation
biologic effect, biologic vibration effect

ABSTRACT: The biological objects used for space research are carefully selected
genetic indicators. E. coli K-12 (λ), frequently chosen for these experi-
ments, is a reliable biological dosimeter of the genetic effectiveness of
spaceflight factors. When normal and cancerous human cells were exposed
in the Vostok series, it was found that these experimental samples did not
differ essentially from control samples kept on earth. However, some
tendency to intensification of phage production was observed in cultures.

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ACC NR: AT6003860

of E. coli in this series (an increase by a factor of 1.2 on Vostok-2, 4.6 on Vostok-3, and 1.96 on Vostok-4). Data from repeated exposure of the same biological object indicate accumulation of the spaceflight effect, although the character of this accumulation is not clear. In a comparison of the results of Vostoks 3-6, it was not possible to establish a linear dependence of biological effect on time of exposure in space. However, factors causing a genetic effect (an increase in the phage-producing activity of a lysogenic culture) definitely operated during these flights.

The following derived values of induced phage production were calculated: 3 for Vostoks 3 and 5 (corresponding to the inducing effect of 3.2 rad of gamma-rays), and 1.8 for Vostoks 4 and 6 (corresponding to 0.8 rad of gamma-rays). Since the doses quoted are higher than those encountered in spaceflight, the observed genetic effect must therefore be partially due to other factors (such as weightlessness, acceleration, vibration, etc.).

To study the operation of one of these factors, E. coli K-12 was subjected to vibrations of 18, 35, 75, 100, and 700 cps for 15--30 min. and, in another series of experiments, to vibration in combination with Co^{60}

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L 14245-66

ACC NR: AT6003860

gamma-irradiation (dose, 100 rad; dose power, 21 rad/min). The experimental results show that vibration alone does not induce phage production but does increase the sensitivity of lysogenic bacteria to the subsequent influence of gamma-irradiation. It is suggested that vibration helps sensitize cells of a lysogenic culture to the influence of cosmic radiation, although it is also possible that the cause of genetic changes is weightlessness in combination with radiation. Orig. art. has: 1 figure and 4 tables.
[ATD PRESS: 4091-F]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 009 / OTH REF: 002

FW
Card 3/3

L 23280-66 EWT(1)/EWT(m) SCTR DD

ACC NR: AP6011437

SOURCE CODE: UR/0020/66/167/004/0925/0927

AUTHOR: Kozlov, V. A.; Saksonov, P. P.; Dobrov, N. N.; Antipov, V. V.; Parshin, V. S.

ORG: none

TITLE: Altered resistance of animals exposed to vibration to the action of some chemical preparations and physical load

SOURCE: AN SSSR. Doklady, v. 167, no. 4, 1966, 925-927

TOPIC TAGS: vibration, cystamine, strychnine, radiation protection, combined stress

ABSTRACT: Two series of experiments were conducted on 449 white mice weighing 20—24 g. In the first series, 240 mice were exposed to vibration (70 cps, 0.4 mm, 10 G, 1 hr exposure), after which they were given IP injections of cystamine chlorhydrate (400 mg/kg) or strychnine (1.5 mg/kg) 20 min or 4 hr later. These preparations were selected because they have a therapeutic effect for radiation sickness or injuries and may be used on prolonged spaceflights, should severe radiation conditions occur. It was established that the toxic action of these drugs was elevated in vibrated animals. In the control group, mortality was 45% for cystamine and 47% for strychnine. In the vibrated

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UDC: 629.198.61

L 23280-66

ACC NR: AP6011437

group, these values increased to 53.7% and 61.2% respectively, although a statistical examination of the data revealed that the difference was insignificant. This indicated that vibration affects the reactivity of the organism to these drugs. In the second series, the ability of control and vibrated animals to adapt to hexanol (100 mg/kg) was tested (65 mice). The preparation was IP injected after 15 min or 4 hr of vibration, as well as on a daily basis thereafter. Table 1 shows the re-

Table 1. Duration of the anesthetic effect of hexanol on control and vibrated mice (mean duration by group in min)

Experimental action	No. of mice	Days of hexanol injection				
		1st	2nd	3rd	4th	5th
Hexanol alone	31	115	50	29	31	32
15 min of vibration prior to 1st hexanol administration	18	106	32	28	22	80
4 hr of vibration prior to 1st hexanol administration	16	110	32	27	31	48

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ACC NR: AP6011437

sults of this test. Three days after this test, the animals were given a toxic dose of strychnine (1.5 mg/kg) which was fatal for control mice in 50% of the cases. Mortality for animals which had been exposed to vibration 15 min or 4 hr prior to hexanol administration was 52% and 75%. For mice given hexanol alone, the mortality was 56%. The difference in mortality between these groups was found not to be statistically

Table 2. Swimming duration of control and experimental mice

Test no.	Experimental action	No. of mice	Swimming duration, min (M m)	Reliability		
				Rel. to test 1	Rel. to test 3	Rel. to test 4
1	Control	20	278 ± 12,0	—	—	—
2	Vibration, no cystamine	20	272 ± 9,5	0,4	—	—
3	Cystamine, no vibration	28	145 ± 8,0	10,4	—	—
4	Vibration plus cystamine	28	115 ± 4,8	12,0	3,9	—
5	Cystamine plus vibration	30	103 ± 7,0	12,6	4,5	1,4

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ACC NR: AP6011437

reliable. To test the effects of vibration and cystamine on the working ability of the organism, mice were exercised by swimming. Cystamine (225 mg/kg) was given either 15 min before or 15 min after vibration, whereupon the animals were placed in a tub of water (24±1C) until exhaustion occurred. Animals unable to swim for 1 hr were eliminated from this test. The results of this test are given in Table 2. These data show that vibration does not decrease working ability but that cystamine given before or after vibration does. Cystamine decreased the tolerance of the organism to exercise but statistically less so than when administered in combination with vibration. Orig. art. has: 2 tables. [CD]

SUB CODE: 06/ SUBM DATE: 29May65/ ORIG REF: 006/ ATD PRESS: 4231

Card

14/4 062

L 14252-66 FSS-2/EWT(1)/FS(s)/ENP(m)/FS(v)-3/EEG(k)-2/FCC/EMA(h) SCTB TT/DD/RD/CH

ACC NR: AT6003911

SOURCE CODE: UR/2865/65/004/000/0701/0708

AUTHOR: Morosov, V. S.; Shashkov, V. S.; Davydov, B. I.; Antipov, V. V.;
Saksonov, P. P.; Dobrov, N. N.

ORG: none

TITLE: Modeling of radiation conditions on a circumlunar trajectory during a solar flare

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 701-708
1965

TOPIC TAGS: space flight simulation, mouse, radiation protection, lunar flight, radiation biologic effect, biologic acceleration effect, solar flare, gamma irradiation, lunar trajectory, radiation belt, antiradiation drug

ABSTRACT: The possibility of modeling the biological effect of radiation on a lunar flight which includes a short solar flare was demonstrated. White mice fed a special food concentration and kept in a biological unit were subjected to gamma-irradiation. Acute irradiation of other animals was conducted in plexiglas cages. In all cases the radiation dose was...

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2
900--920 r. Dose power during acute irradiation was 18 r/min and during "solar flare" a maximum of 2.5 r/min (duration of flare, 24 hr). On the simulated lunar trajectory, the animals received a dose of 60--80 r while passing through the "radiation belts." Before the solar flare, the mice were injected with the following radioprotective agents: cystamine dihydrochloride, AET, and 5-methoxytryptamine hydrochloride. 44

The experimental results showed that the effects of this pharmacological protection were slight as compared with unprotected animals. AET was the most effective radioprotective agent during both "lunar flight" and acute irradiation. On the lunar flight the animals were subjected to an acceleration of 20 g for 5 min before irradiation and at the end of the flight. It is suggested that the observed lowering of the biological effect of radiation during lunar flight (only 33% of the mice died, as against 90% after acute irradiation) is due not only to the lowered dose power, but also to acceleration. It is known that acceleration can alter the reactivity of an animal to subsequent irradiation. Previous experiments also suggest that preliminary irradiation of 60 r (in the radiation

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ACC NR: AT6003911

belts) reduced the effectiveness of the subsequent high dose during solar flare.
It was concluded that modeling of radiation conditions for any spaceflight
trajectory should be possible. Orig. art. has: 2 figures and 3 tables.
[ATD PRESS: 4091-F]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 006 / OTH REF: 006

FW
Card 3/3

L 11250-66 (H) EWT(d)/EWT(m)/EWP(w)/EWP(v)/EWP(j)/T/EWP(k)/EWA(h)/ETC(m) EM/WW/RM
 ACC NR: AP5028475 SOURCE CODE: UR/0286/65/000/020/0056/0057
 INVENTOR: Gavrilov, I. K.; Filippov, D. A.; Strukov, V. M.; Blatov, V. S.; Shalimov, A. S.; Vul. N. I.; Ivanov, A. S.; Belyakov, V. S.; Frolov, A. S.; Khantsia, R. Z.; Andriyevskaya, G. G.; Zelenskiy, E. S.; Kuperman, A. M.; Dobrovol'skiy, A. K.; Dzhhereliyevskiy, A. B.
 ORG: none
 TITLE: Method of fabricating fiberglass shells. Class 32, No. 175624
 SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 56-57
 TOPIC TAGS: shell, cylindrical shell, fiberglass shell, shell fabrication, fiberglass winding, solid fuel rocket, rocket case
 ABSTRACT: This Author Certificate introduces a method of fabricating shells from fiberglass wound on a pattern which is then melted out or dissolved. To increase the strength of the shell, the winding is combined with the stretching of fiber by means of a fiber guide which rotates around the pattern.
 SUB CODE: 11,19 SUBM DATE: 02Jul64/ ATD PRESS: 4474
 HW
 Card 1/1

L 11260-66 (A) EWT(d)/EWT(m)/EWP(w)/EWP(v)/EWP(j)/T/EWP(k)/EWA(h)/ETC(m) EN/WW/RM
 ACC NR: AP5028475 SOURCE CODE: UR/0286/65/000/020/0056/0057
 INVENTOR: Gavrilov, I. K.; Filippov, D. A.; Strukov, V. M.; Biatov, V. S.; Shalimov, A. S.; Vul. N. I.; Ivanov, A. S.; Belyakov, V. S.; Frolov, A. S.; Khantsis, R. Z.; Andriyevskaya, G. G.; Zelenskiy, E. S.; Kuperman, A. M.; Dobrovol'skiy, A. K.; Dzhireliyevskiy, A. B.
 ORG: none
 TITLE: Method of fabricating fiberglass shells. Class 32, No. 175624
 SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1065, 56-57
 TOPIC TAGS: shell, cylindrical shell, fiberglass shell, shell fabrication, fiberglass winding, solid fuel rocket, rocket case
 ABSTRACT: This Author Certificate introduces a method of fabricating shells from fiberglass wound on a pattern which is then melted out or dissolved. To increase the strength of the shell, the winding is combined with the stretching of fiber by means of a fiber guide which rotates around the pattern.
 SUB CODE: 11,19 SUBM DATE: 02Jul64/ ATD PRESS: 4471
 HW
 Card 1/1

L 08280-67 -- EWT(1) SCTB DD/GD

ACC NR: AT6036477

SOURCE CODE: UR/0000/66/000/000/0030/0031

AUTHOR: Antipov, V. V.; Kozlov, V. A.; Davydov, B. I. Dobrov, N. N.;
Razgovorov, B. L.; Saksonov, P. P. 31
B+1

ORG: none

TITLE: New data on changes in the reactivity of the organism under the effect of
several spaceflight factors [Paper presented at the Conference on Problems of
Space Medicine held in Moscow from 24-27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy
kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii,
Moscow, 1966, 30-31

TOPIC TAGS: space physiology, combined stress, biologic vibration effect, biologic
acceleration effect, ionizing radiation biologic effect, rat, cystamine, strychnine,
proton radiation biologic effect

ABSTRACT:

Experiments were performed to test changes in the reactivity of the
organism which result from spaceflight factors (vibration, acceleration,
ionizing radiation) and their combinations. The functional condition of the
organism was evaluated using pharmacological and physical methods.

Card 1/2

L 08280-67 -

ACC NR: AT6036477

It was found that vibration (70 cps at 10 G, for 1 hr) did not affect the stamina of the animal to physical exercise (swimming). The administration of cystamine (225 mg/kg) either before or after vibration caused a marked decrease in the duration of the swimming by the animal. Cystamine alone decreased the stamina of the organism during exercise, but to a significantly smaller degree than in combination with vibration. Vibration had the effect of moderately increasing the sensitivity of the organism to cystamine (400 mg/kg) and strychnine (1.5 mg/kg).

Four hours after exposure to acceleration (8 G, chest-back, for 20 min), a statistically significant drop in the physical stability of the animals was observed. On the seventh day after exposure stability increased. Changes in the reactivity of centrifuged animals with respect to physical exercise corresponded to shifts in the ceruloplasmin in the blood.

Forty days after exposure to protons (energy 120 Mev, doses from 700--1770 rad), the stability of animals to physical loads was lowered. Preliminary centrifugation (8 G for 15 min four hours prior to irradiation with doses of 400 and 700 rad) increased somewhat the resistance of animals to radiation. (W. A. No. 22; ATD Report 66-116)

SUB CODE: 06 / SUBM DATE: 00May66

Contd 2/2 LS

ACC NR: AT6036632

SOURCE CODE: UR/0000/66/000/000/0335/0336

AUTHOR: Saksonov, P. P.; Antipov, V. V.; Dobrov, N. N.; Kozlov, V. A.; Shashkov, V. S.

ORG: none

TITLE: Problems of pharmacochemical protection of the organism against ionizing radiation on spaceflights [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24-27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 335-336

TOPIC TAGS: radiation protection, pharmacology, ionizing radiation biologic effect, cosmic radiation biologic effect, life support system, radiation tolerance, space medicine

ABSTRACT:

Although some pharmacochemical substances have a demonstrated ability to increase the radioresistance of both humans and animals, they cannot be used unconditionally in spaceflight. Special features of the cosmic radiation effect which must be considered in the search for effective

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ACC NR: AT6036632

radioprotective agents include: 1) the complex spectrum of cosmic radiation and its variable dose power (Protons of varying energies and undetermined RBE comprise 80% of cosmic radiation); and 2) alteration of the organism's reactivity to chemical substances, and to the combined effect of radiation and other spaceflight factors, such as acceleration, weightlessness, and altered pressure. Unfortunately, effective radioprotectors alter the organism's reactivity in such a way that it becomes less resistant to the effects of unfavorable flight factors, especially acceleration and vibration.

Before the problem of human pharmacochemical protection in spaceflight can be solved, a number of important studies must be conducted. First, the possibility of use of antiradiation agents during irradiation of biological objects with low, variable dose powers must be determined. Much more information about the effectiveness of such drugs under the combined influence of radiation and other spaceflight factors is necessary. Then it may be possible to eliminate the unfavorable effect of radioprotectors on the organism's tolerance to other spaceflight factors.

Radioprotective substances intended for use in spaceflight must offer good protection without altering the organism's resistance to other spaceflight factors, even after multiple administration. They must not hinder

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ACC NR: A76036632

work capacity even briefly, and also must be available in convenient medicinal form. In addition, radioprotectors used in spaceflight must not damage the hereditary structures or disrupt the physiological functions of links in the spacecraft life-support system.

[W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 3/3

L 37643-66 FSS-2/EWT(1)/EEC(k)-2/FCC/T SCTB TT/DD/JK/GW
ACC NR: AP6024650 SOURCE CODE: UR/0216/66/000/004/0592/0593

AUTHOR: Zhukov-Verezhnikov, N. N.; Mayskiy, I. N.; Pekhov, A. P.;
Rybakov, N. I.; Dobrov, N. N.; Antipov, V. V.; Kozlov, V. A.;
Saksonov, P. P.; Podoplelov, I. I.

ORG: none

TITLE: Results of study of the effect of cosmic radiation and other
spaceflight factors on lysogenic bacteria and human cell cultures
[Paper presented at the Anniversary Symposium of the Institute of Bio-
physics of the Czechoslovak Academy of Sciences held in Brno in May
1965]

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 4, 1966,
592-593

TOPIC TAGS: spaceflight effect, radiation effect, Hela cell, lysogenic
bacteria / Vostok 4 spacecraft, Vostok 6 spacecraft, Voskhod 1 spacecraft

ABSTRACT: Single-layer cultures of normal human cells (fibroblasts and
amniotic cells) and human cancer cells (Hela strain), together with
cultures of lysogenic bacteria (E. coli K-12), have been consistently
used as radiation indicators on Soviet spacecraft. Results of these
experiments have shown that repeated exposure of a culture of Hela cells
to spaceflight factors on the Vostok-4 and Vostok-6 flights produced

Card 1/2 UDC: 629.195:577.391

L 37643-66

ACC NR: AP6024650

changes in experimental cells as compared with laboratory controls and with Hela cells exposed on one spaceflight only. A longer latent period of recovery of growth capacity and other characteristics [not named] were noted in twice-flown cultures. In addition, the coefficient of proliferation for Hela cells exposed on both Vostok-4 and Vostok-6 was one-half that for intact controls and for Hela cells exposed to spaceflight only once. These data suggest that spaceflight factors have a cumulative biological effect on human cell cultures. However, a direct dependence of biological effect on length of spaceflight exposure has not been established in experiments with the other radiation indicator, the lysogenic bacteria *E. coli* K-12 (λ). It is interesting to note that when the same Hela cells used on Vostok-4 and Vostok-6 were also exposed on Voskhod-1, a well-defined drop in the proliferation coefficient was observed in comparison with intact cultures. Experimental colonies were more compact, and there were more dead cells. Other reliable differences [not enumerated] were also found between intact controls and thrice-exposed cultures. However, no reliable differences could be detected between thrice-exposed Hela cells and a control strain used only on Vostok-6. It is suggested that the biological effect of spaceflight may be the result of the combined influence of radiation, vibration, and weightlessness. [JS]

SUB CODE: 06/ SUBM DATE: none/ ATD PRESS: 5146

L 03775-67 FSS-2/EWT(1)/EWT(m)/EEC(k)-2/FCC SCTB TT/DD/RD/GW

ACC NR: AP6028342

SOURCE CODE: UR/0293/66/004/004/0630/0633

AUTHOR: Volynkin, Yu. M.; Antipov, V. V.; Davydov, B. I.; Dobrov, N. N.;
Nikitin, M. D.; Pisarenko, N. F.; Saksonov, P. P.

ORG: none

TITLE: Assurance of ¹⁹radiation ¹⁸safety during the ¹⁷Voskhod-1 and ¹²Voskhod-2 flights

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 4, 1966, 630-633

TOPIC TAGS: space radiation, ~~radiation safety~~ ^{spacecraft}, solar flare, ~~radiation~~ ^{radiation}, radiation shielding, radiation dosimetry, nuclear emulsion, radiation ~~sensor~~ ^{detector}, EVA, lysogenic bacteria/Voskhod-1, Voskhod-2 ^{spacecraft}

ABSTRACT: The Voskhod-1 and Voskhod-2 flights were characterized by extremely high orbits (apogee 495 km). It was calculated that Voskhod-2 would have a far higher radiation exposure due largely to the proton component in the area of the Brazilian anomaly, where in the course of 20 min the spaceship would acquire about 80% of the daily dose. The extravehicular surface dose of electrons during 20 min could amount to 1 rad. In order to reduce this to zero a protective layer of 100 mg/cm² is required. Leonov's spacesuit fulfilled this shielding requirement. Since exposure to radiation may reach dangerous proportions during solar flares the following radiation protection measures were taken during the Voskhod-1 and Voskhod-2 flights. A preliminary study was made of radiation conditions on the proposed orbit. Forecasts

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UDC: 614.876(202)

L 03775-67

ACC NR: AP6028342

of the possibility of solar flares were made. The radiation dose was reduced by spacecraft shielding. Changes in the level of radiation in the upper atmosphere were checked by means of balloon sondes. Integral doses and dose rates were measured by on-board radiation meters. Individual dosimeters of the ILK, IKS, and IFKN types and nuclear emulsions were used to measure the total doses acquired by each cosmonaut. Living organisms were carried on board as biodosimeters. Radioprotective drugs were carried for emergency use by the cosmonauts. In order to determine the effect of low-energy electrons during Leonov's EVA the two cosmonauts carried identical sets of dosimeters (on the chest under the spacesuit and in external hip pockets), which were capable of working in high-vacuum conditions. However, Leonov's dose did not exceed Belyayev's. Individual and on-board dosimeters indicated that the total dose received on Voskhod-2 was 70 ± 5 mrad, while that on Voskhod-1 was 30 ± 5 mrad. Analysis of the spectral composition of radiation made by nuclear emulsions indicated the presence of particles with linear energy losses comparable to ions of He, B, O, and Ar. The radiation dose, taking RBE into account, did not exceed several dozen ber. Biological objects carried on Voskhod-1 and Voskhod-2 showed increases in non-disjunction of chromosomes and increases in frequency of dominant lethal mutations in *Drosophila*, and disruption of the mitotic mechanism in microspores of *Tradescantia*; these increases, however, were small. Lysogenic bacteria carried on the two Voskhod flights did not show any effect of radiation or other spaceflight factors. Experiments performed by B. B. Yegorov have indicated that various stages of mitosis in *Tradescantia* microspores possess varying sensitivity to the effects of spaceflight factors. These findings confirmed Yegorov's hypothesis that the chief cause of

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L 03775-57

ACC NR: AP6028342

disruption of the mitotic mechanism is weightlessness and that chromosome reconstructions are due largely to combined factors related to spaceflight takeoff and reentry. Orig. art. has: 2 tables. [BM]

SUB CODE: 06/ SUBM DATE: 21Aug66/ ORIG REF: 006/ ATD PRESS: 5064

Card 3/3

ACC NR: AT6036563

SOURCE CODE: UR/0000/66/000/000/0172/0173

AUTHOR: Zhukov-Verezhnikov, N. N.; Mayskiy, I. N.; Tribulev, G. P.; Rybakov, N. I.;
Podoplelov, I. I.; Dobrov, N. N.; Antipov, V. V.; Kozlov, V. A.; Saksonov, P. P.;
Parfenov, G. P.; Sharyy, N. I.

ORG: none

TITLE: Some results and trends in the study of the biological effect of cosmic radiation and dynamic flight factors using microbiological and cytological models
[Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SCURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 172-173

TOPIC TAGS: manned space flight, space biologic experiment, tissue culture, lysogenic bacteria, cosmic radiation biologic effect, combined stress/Voskhod-1

ABSTRACT: Systems of lysogenic bacteria and single layer cultures of normal and cancer cells of man have been used on all spaceflights since the second orbital spaceship. This report presents the results of investigations performed on spaceships of the Vostok and Voskhod types. Biological experiments carried out on Vostok-3, -4, -5, and -6 indicate that phage production of lysogenic culture of E. coli K-12 increases with the duration of the flight. However, a direct linear relationship between the biological

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ACC NR: AT6036563

effect and the time of exposure in space was not established. The results obtained make it possible to assume that the biological effect in the above experiments depends on the combined effect of spaceflight factors, and specifically vibration, weightlessness, and radiation.

Ground experiments have indicated that the sensitivity of a lysogenic bacteria system to gamma irradiation (CO^{60}) increases if the bacteria were previously exposed to vibration. These results not only confirm this supposition but make a more differentiated approach to evaluation of various spaceflight factors possible. However, in order to obtain a more complete picture of the genetic and radiation hazard of such flights, it is necessary to consider data obtained with more highly organized biological objects. Consequently, the results of spaceflight experiments performed with single-layer cultures of somatic human cells are of definite interest. In the series of experiments carried out on Vostok-1, -2, and -4, it was found that viability, and such indices as the coefficient of proliferation, the percentage of dead cells, and the morphological, antigenic, and cultural properties of the tissues, did not differ substantially from controls which were kept at the cosmodrome or the laboratory.

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ACC NR: AT6036563

However, when tissues were subjected to a second spaceflight (on Vostok-4, Vostok-6, and Voskhod-1), the twice-flown tissues showed a definite prolongation in the latent period of the ability to grow, as well as certain other noticeable changes. This makes it possible to surmise that spaceflight factors may have a cumulative effect on human tissue cultures. Further investigations of the biological effects of spaceflight utilizing lysogenic bacteria and tissues of various cultures are contemplated. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06, 22 / SUBM DATE: 00May66

Card 3/3

ACC NR: AT7011642

SOURCE CODE: UR/0000/66/000/000/0001/0006

AUTHOR: Volynkin, Yu. M.; Antipov, V. V.; Davydov, B. I. Dobrov, N. N.;
Nikitin, M. D.; Pisarenko, N. F.; Saksorov, P. P.

ORG: none

TITLE: Radiation safety during the flights of the Voskhod and Voskhod-2
spacehips

SOURCE: International Astronautical Congress. 17th, Madrid, 1966. Doklady.
no. 4. 1966. Obespecheniye radiatsionnoy bezopasnosti pri poletakh korabley
"Voskhod" i "Voskhod-2", 1-6

TOPIC TAGS: ionizing radiation biologic effect, proton radiation biologic
effect, EVA, space physiology, space biologic experiment, space flight /
Kosmos-47 space flight, Voskhod-1 space flight

ABSTRACT:

Radiation conditions on the Voskhod-1 trajectory
were forecast using Kosmos-47, a satellite launched
into the proposed orbit shortly before the manned space-
flight. A greater radiation hazard was predicted for

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ACC NR: AT7011642

the Voskhod-w spacecrew because of the higher orbit and extravehicular activity planned for this flight. Preliminary calculations set the maximum 24-hr dose at 0.1 rad, about 80% of which was expected to accumulate during 20 min spent passing through the region of the Brazilian anomaly. It was calculated that the EVA would expose Leonov to as much as 1 rad of electron radiation in a 20-min period, and that shielding of 100 mg cm² would be required to eliminate this hazard. Leonov's spacesuit fulfilled the shielding requirement. A total dose of no more than several dozen REM was anticipated for the Voskhod spacecrew for the 24-hr period.

The possibility of radiation injury from solar flare protons was carefully considered. Disruptions of the Earth's geomagnetic field after some solar flares are known to affect the "radiation screen" of the geomagnetic field. Thus, approximate total doses from large flares of the type 10 March 1959 and 12 November 1960 were calculated with different shielding thicknesses, discounting the screening effect of the Earth's magnetic field. (see Table 1)

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Table 1

Energy of protons E, Mev	Shielding of air- equivalent sub- stance, g/cm ²	Dose from flare, rad	
		Nov. 12, 1960	May 10, 1959
E > 40	1.5	550	1120
E > 80	5.0	90	70
E > 100	7.0	50	20
E > 200	24.0	10	1

As can be seen from the table, cosmonauts can receive radiation doses sufficient to disrupt working capacity or endanger life during a solar flare. Consequently, an important part of the radiation safety program consists of predicting potentially hazardous solar flares.

In addition to the measures just described, the Voskhod radiation safety system included measurements of radiation levels in the upper atmosphere using sounding balloons. In addition, a radiometer on the craft measured total dose and dose rate, each cosmonaut carried

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individual dosimeters (ILK, IKS, and IFKN types, and nuclear emulsions), and there were biological dosimeters on board. Chemical radioprotectors were available for emergency situations.

In order to determine the possible effect of electron radiation during the EVA, both cosmonauts wore an identical set of dosimeters equipped to work in a vacuum, one in the chest area under the suit, and one in the outside hip pocket.

Although the period before the Voskhod-1 launch was one of minimal solar activity, on October 9, 1964, (3 days before the launch) at 8:30 A. M. a 23-fold increase in radioactivity was noted in the upper atmosphere at an altitude of 22 km. The increased radioactivity lasted 2 hr and is still unexplained.

Doses obtained by Voskhod crew members are shown in Table 2.

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Table 2. Total radiation doses obtained by crew members on Voskhod-1 and Voskhod-2 spacecraft, in mrad (tissue)

Name of spacecraft	Individual dosimeters		R-ZAM on-board dosimeter	
	average dose for flight, mrad	average dose rate, mrad/day	dose for flight, mrad	dose rate, mrad/day
Voskhod-1	30±5	29±3	27±1	26±1
Voskhod-2	70±5	65±3	65±1	60±1

The total radiation dose received by Leonov was not higher than that obtained by Belyayev due to electron radiation outside the spacecraft, as had been expected. The fact that the absorbed tissue doses received by Voskhod-1 and Voskhod-2 cosmonauts were two and four times higher, respectively, than doses received on the Vostok flights can be explained by the difference in orbits and by some increase in the intensity of primary cosmic radiation characteristic for quiet Sun periods.

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The radiation doses for Voskhod crew members did not exceed several dozen REM each, as calculated. This radiation dose is not considered injurious to human health.

Biodosimeters carried on the Voskhod craft included seeds of higher plants, microorganisms, and fruit flies. In addition, Leonov had pine and wheat seeds and lysogenic bacteria in his hip pocket during the EVA. Analysis of this biological material showed that spaceflight factors had the following effects: mitosis was disrupted in *Tradescantia paludosa* microspores, and there were more dominant lethalties and cases of nonseparation of chromosomes in *Drosophila*. These shifts were of the same type as those observed in the Vostok-2, -3, and -6 experiments, and were also numerically insignificant. Lysogenic bacteria and plant seeds exposed in open space or kept in the spacecraft did not show the effects of spaceflight factors.

Yegorov's experiment with *Tradescantia* microspores demonstrated that the various mitotic phases of this organism have different sensitivities to spaceflight

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ACC NR: AT7011642

factors. Furthermore, this experiment suggested that weightlessness may be the cause of disrupted mitosis in Tradescantia microspores, and that chromosome rearrangements are chiefly caused by factors associated with launch and descent.

Results of biological experiments conducted on the Voskhod spacecraft are in agreement with data from physical dosimeters. Periodic postflight examinations of all Voskhod crew members have also demonstrated the absence of a harmful radiation effect. Orig. art. has: 2 tables.

[ATD PRESS: 5098-F]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 006

Card 7/7

DOBROV, S., inzh.

Mechanization of the manufacture of parts of frame buildings.
Sel'. stroi. 18 no.5:10-11 My '63. (MIRA 16:6)

(Concrete plants—Equipment and supplies)

DOBROV, V., glavnyy inzhener.

Fuller utilization of the water supply system's internal potentialities.
Zhil.-kon.khoz. vol.3 no.9:18 S '53. (MLBA 6:9)

1. Upravleniye Kaluzhskogo vodokanala. (Water-supply engineering)

DOEROV, V. P.

DOEROV, V. P.

"Questions on the Design of Roller Leveling Machines for the Cold-Trimming of Products With Rectangular Cross Sections." Cand Tech Sci, Dnepropetrovsk Order of Labor Red Banner Metallurgical Institute I. V. Stalin, Min of Higher Education USSR Dnepropetrovsk, 1954. (KL, No 8, Feb 55)

SO: Sum. No. 631, 26 Aug 55-Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

"APPROVED FOR RELEASE: 06/12/2000

CIA-RDP86-00513R000410620013-4

APPROVED FOR RELEASE: 06/12/2000

CIA-RDP86-00513R000410620013-4"

AUTHORS: Shchirenko, N.S., Dobrov, V.P. 32-24-4-52/67

TITLE: A Current Collector for Measuring the Axial Angular Momentum by Means of Wire Resistance Cells (Tokos'yemnik dlya zamera krutyashchego momenta vala provolochnymi datchikami soprotivleniya)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 4, pp. 491-492 (USSR)

ABSTRACT: A system of simple construction was developed for the above mentioned determination. An insulating band is wound in two or three layers round the axis to be investigated at the place at which the current collector ring is located, and in between insulated lines are laid which are connected with the cells fastened on to the shaft and with the corresponding current collector rings. Copper wire is wound round the insulating layer and an overlapping copper screen is provided which serves as a contact of the current collector. A strip of copper foil, fastened onto a wooden angle lever serves as a brush. The latter is provided with a cut-out section thus making contact, while the shaft is revolving, possible. Laboratory tests show that this type of current collector operates well at rotation speeds of up to 5 m/sec. An angular momentum oscillogram is given and the

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Angular Momentum by Means of Wire Resistance
Cells

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collaborators assisting in investigations are mentioned:
L.A. Chernov, V.P. Kuz'min, Ya.G. Skripka, V.S. Belen'kiy,
Z.I. Itskhakin, S.D. Zazulya and A.G. Belukhin. There are
2 figures.

ASSOCIATION: Dnepropetrovskiy metallurgicheskiy institut im. I.V. Stalina
(Dnepropetrovsk Metallurgical Institute imeni I.V. Stalin)

1. Shafts--Performance 2. Rotation--Velocity 3. Rotation
--Measurement 4. Electrical equipment--Applications

TITLE: Angular momentum

Card 2/2

AUTHORS: Sapko, A.I. and Dobrov, V.P.

130-58-5-8/16

TITLE: Improving the Construction of Arc Electric Furnace Cooling Equipment (Uluchsheniye konstruktsiy okhladitel'noy armatury dugovykh elektropetchey)

PERIODICAL: Metallurg, 1958, Nr 5, pp 17 - 20 (USSR).

ABSTRACT: The authors state that more than half the idle time of electric-arc steel-melting furnaces is due to failure in cooling equipment and go on to discuss progress in the last 10-12 years in the design of such items. Various roof-ring designs have been tested at the "Dneprospetstal'" Works, both uncooled cast and welded Siemens types being found unsuitable for large furnaces. The Works' own design of water-cooled ring (made of I-beams) (Figure 1, 6) proved satisfactory for furnaces below 30 tons capacity but for larger ones a more rigid design was produced by the works (Figure 1, B). The authors recommend that designs of the latter type with enlarged ring diameter (Figure 3) should, because of their minimisation of thermal shocks, be widely considered. Good results over a long period have been obtained with a welded combined slag-door arch (Figure 6), which the authors recommend for adoption on large furnaces. For electrode rings, the authors favour a

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Improving the Construction of Arc Electric Furnace Cooling Equipment ^{130-58-5-8/16}

welded ring of a shortened type (Figure 7, 6) but they considered that this, too, could be improved. There are 7 figures.

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SOV/130-58-6-9/20

AUTHORS: Sapko, A.I., Dobrov, V.P. and Kucherov, V.D.

TITLE: Mechanization of the Preparation of Powdered Materials
in the Melting of Electric Steel (Mekhanizatsiya
prigotovleniya poroshkovykh materialov pri vyplavke
elektrostali)

PERIODICAL: Metallurg, 1958, Nr 6, pp 20 - 22 (USSR)

ABSTRACT: The authors point out that although large quantities of finely ground materials (such as ferrosilicon, coke, hot-top compound) are required for producing quality and high-quality steels, there is generally insufficient mechanisation of the preparation of these powders. They list the defects of most preparation methods and describe several improvements developed and introduced at the "Dneprospetsstal" Works. One is a special drum for crushing ferrosilicon (Figure 1) which can deal with 0.5 t/h. The drum consists of two end plates mounted on a driven shaft and connected peripherally to each other with square, manganese-steel bars, the whole being hermetically enclosed in a casing. The drum discharges through a screen (Figure 3) into a box (Figure 2); oversize is returned in another box. The authors state that similar equipment with balls can be used for coke and charcoal. For preparing hot-top compound, a special mixer has been provided (Figure 4) into

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Mechanization of the Preparation of Powdered Materials in the Melting
of Electric Steel

which screened and weighed components are charged; mixing takes 15 - 20 min. after which the powder is discharged into a box which is transported by narrow-gauge track to a special bunker in the casting bay. On the basis of experience at "Dneprospetsstal'", the authors conclude that crusher-roll mills are particularly undesirable. They suggest that for automation to be introduced, all equipment for preparing the powders should be concentrated and that automatic weighing of hot-top mixture components and special feeders for supplying material from the bunkers to the crushing equipment should be developed. There are 4 figures.

ASSOCIATION: Zavod "Dneprospetsstal'" ("Dneprospetsstal'" Works)
and Dnepropetrovskiy metallurgicheskiy institut
(Dnepropetrovsk Metallurgical Institute)

Card 2/2

1. Metallurgy - USSR
2. Powder alloys - Preparation
3. Steel - Manufacture

SHCHIRENKO, N.S., doktor tekhn.nauk, prof.; ~~DOBROV, V.P.~~, kand.tekhn.
nauk; KUTNER, M.B., inzh.; PEVTSOV, V.P., inzh.

New intermediate rapidly rotating hopper for the distribution
of blast furnace burden. Izv. vys. ucheb. zav.; chern. met.
no.7:177-183 J1 '58. (MIRA 11:10)

1. Dnepropetrovskiy metallurgicheskiy institut i Dnepropetrovskiy
Gipromez.

(Blast furnaces)

SOV/133-58-12-3/19

AUTHORS: Shchirenko N.S., Doctor of Technical Science; Professor;
Polovchenko I.G. and Dobrov V.P., Candidates of Technical
Science; and Labkovskiy A.M., Engineer.

TITLE: An Experience in the Operation of a New Type of Burden
Distributor (Opyt raboty novogo raspredelitelya)

PERIODICAL: Stal', 1958, Nr 12, pp 1066-1071 (USSR)

ABSTRACT: A new type of burden distributor with a rotating inter-
mediate funnel (Fig 1) proposed by N.S. Shchirenko, was
tested on a blast furnace with a working volume of 997 m³.
The characteristic feature of the distributor is that the
hopper of the small bell remains stationary, while the
uniformity of the distribution of materials on the small
bell is attained by a rapidly rotating funnel situated
over the small bell hopper, during the discharge of
materials from skips. During the development of the new
distributor intermediate funnels with various outlets
were tested, the best results being obtained when the
rotating funnel had two outlets. Observations on the
distribution of materials before blowing in (Fig 3) and
during furnace operation as judged by the distribution

Card 1/2

SOV/133-58-12-3/19

An Experience in the Operation of a New Type of Burden Distributor of CO₂ in the top gas along the furnace diameter (Figs 4 and 5) and burden descent on the new distributor gave a more uniform distribution than the usual type of the distributor. During 10 months of the furnace operation with the new distributor satisfactory results were obtained. There are 6 figures.

Card 2/2

DOBROV, V.P.; KVASHA, A.N.; STOROZHUK, D.A.

Calculating the strength of bell hoppers of the blast furnace
charging apparatus. Izv. vys. ucheb. zav.; chern. met no.8:167-
180 '60. (MIRA 13:9)

1. Dnepropetrovskiy metallurgicheskiy institut.
(Blast furnaces)

SMIRNOV, S.S.; EYSMONT, I.I.; GONCHARENKO, I.N.; SHIMANSKIY, N.I.;
DOBROV, V.P.

Substitution of vibrating screens for disk-grizzly screens in
coke-assorting shops. Koks i khim. no.10:31-34 '60.

(MIRA 13:10)

1. Bagleyskiy koksokhimicheskiy zavod (for all except Dobrov).
2. Dnepropetrovskiy metallurgicheskiy institut (for Dobrov)
(Coke industry--Equipment and supplies) (Coke)

DOBROV, V.P., kand.tekhn.nauk, dotsent; CHEL'TSOV, Ya.F., inzh.

Experimental investigation of static forces in changing blast
furnace tuyeres. Stal' 21 no.12:1065 D '61. (MIRA 14:12)

1. Dnepropetrovskiy metallurgicheskiy institut.
(Blast furnaces--Maintenance and repair)
(Materials handling)

SHCHIRENKO, Nikolay Semenovich, doktor tekhn. nauk, prof.[deceased];
DOEROV, V.P., kand. tekhn. nauk, dots., nauchnyy red.;
YEZDOKOVA, M.L., red. izd-va; VAGIN, A.A., red. izd-va;
KARASEV, A.I., tekhn. red.

[Mechanical equipment of blast-furnace plants] Mekhanicheskoe
oborudovanie domennykh tsekhov. Pod red. V.P.Dobrova. Moskva,
Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metal-
lurgii, 1962. 524 p. (MIRA 15:2)
(Blast furnaces--Equipment and supplies)

SAPKO, A.I., kand.tekhn.nauk; DOBROV, V.P., kand.tekhn.nauk;
DEM'YANETS, L.A., inzh.; KRAVCHENKO, V.A., kand.tekhn.nauk;
DEKHANOV, N.M., inzh.

Electrohydraulic voltage regulators on arc furnaces for the
manufacture of ferroalloys. Mat. i gornorud. prom. no.4:19-25
Jl-Ag '62. (MIRA 15:9)

1. Dnepropetrovskiy metallurgicheskii institut (for Sapko,
Vobrov, Dem'yanets). 2. Zaporozhskiy zavod ferrosplavov
(for Kravchenko, Dekhanov).
(Electric furnaces) (Automatic control)

SAPKO, A.I.; SVIRIDENKO, L.G.; BOBROV, V.P.; GLADKIY, D.F.; BUZUNOV, I.S.;
PICHAK, G.V.

Remote control of steel-pouring ladle plugs. Metallurg
7 no.6:18-21 Je '62. (MIRA 15:7)

1. Dnepropetrovskiy metallurgicheskiy institut i Dnepropetrovskiy
staleplavil'nyy zavod vysokokachestvennykh i spetsial'nykh
staley.

(Electric furnaces--Equipment and supplies)
(Remote control)

SAPKO, A.I., kand.tekhn.nauk; DOBROV, V.P., kand.tekhn.nauk; DEM'YANETS, L.A.,
inzh.; DEKhanov, N.M., inzh.; VOLKOV, V.F., inzh.; KRAVCHENKO, V.A.,
inzh.; BOYTISOV, L.I., inzh.; SEMENOVICH, B.V., inzh.; FRISH, M.I.,
inzh.

Investigating power regulators with electromechanical and
electrohydraulic drives on ferroalloy refining furnaces. Stal'
22 no.4:321-324 Ap '62. (MIRA 15:5)
(Electric furnaces)

1. YA. B. DOBROV
2. USSK (600)
4. Bearings (Machinery)
7. Coating the bearings of an electric motor with babbit. Rab. energ. 2 no.
12. 1952.
9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

TIKHONENKO, T.I.; PEREVERTAYLO, G.A.; DOBROV, Ye.N.; KISELEV, F.L.

Mechanism of the thermal denaturation of deoxyribonucleic acid.
Dokl. AN SSSR 151 no.1:237-240 J1 '63. (MIRA 16:9)

1. Institut virusologii AMN SSSR. Predstavleno akademikom
A.N.Belozerskim.

(Nucleic acids)

DEMBO, A.T.; ~~DOBROV, Ya.N.~~; LEDNEV, V.V.; TIKHONENKO, T.I.; FEYGIN, L.A.

DNA packing inside the heads of bacteriophages D₇, T₂, and S_d.
Biofizika 10 no.3:404-407 '65. (MIRA 18:11)

1. Institut kristallografi AN SSSR, Moskva i Institut virusologii
imeni Ivanovskogo AMN SSSR, Moskva. Submitted Oct. 10, 1964.

119-3-4/14

AUTHOR: Dobrov, Ye. V.

TITLE: Influence of the Instability of Temperature of a Modulator
With Germanium Triodes on the Performance of an Operational
D-C Amplifier
(Vliyaniye temperaturnoy nestabil'nosti modulyatora na germaniyevom triode na rabotu operatsionnogo usilitelya postoyannogo toka)

PERIODICAL: Priborostroyeniye, 1958, Nr 3, pp. 12 - 15 (USSR)

ABSTRACT: For the analysis of the temperature independence of an operation amplifier, caused by the non-perfect characteristic of the modulator, the dependence between its initial voltage and the parameters of the modulator, that is between the current I_p and the voltage U_p , must be found.
At first this dependence is derived by calculation and the initial voltage of the amplifier is calculated at:
$$U_{initial} \approx (U_p - I_p^2 R) \cdot (1 + k_o) - I_p^2 R$$

Card 1/2 It follows from this that the germanium modulator in the opera-

119-3-4/14

Influence of the Instability of Temperature of a Modulator With Germanium Triodes on the Operation of a Constant "Operation Current Amplifier"

tion current amplifier can be a double source for disturbances:

- 1) Disturbances depending linearly on the amplifying coefficient of the amplifier. These can be regarded as a voltage regenerator which is switched on at the inlet of the amplifier and causes an e.m.f. which is equal to $U_p - 2I_p R$.
- 2) Disturbances which can be represented as current.

The current at the outlet of the amplifier causes a voltage which is proportional to the resistance R_2 of the regenerative coupling.

The measured values of U_p and I_p , for normal and inverse engaging are given for 4 triode groups of Russian origin P1D (19pcs), F1E (19pcs), P2A (15pcs), P6V (12pcs). Maximum, average and minimum value. There are 4 figures, 2 tables, and 3 references, 1 of which is Slavic.

AVAILABLE: Library of Congress

Card 2/2

1. Modulators-Temperature control
2. Triode--Applications

DOBROV, Ye. V. Cand Tech Sci -- (diss) ^{DC} "Study of operational semiconductor
~~discrete~~ ~~discrete~~ ~~current~~ amplifiers." Mos, 1959. 19 pp (Min of Higher
and Secondary Specialized Education RSFSR. Mos Order of Lenin and Order of
Labor Red Banner Higher Tech School im Bauman), 150 copies (KL, 52-59, 121)

DOBROU, YE.V.

Moscow. Vysshye tekhnicheskoye uchilishche Ieni Bauman. Kafedra matematicheskikh mashin	
Vyshtet'lnaya tekhnika (Computer Techniques) Moscow, Mashgiz, 1959. 153 p. (Series: Moscow. Vysshye tekhnicheskoye uchilishche. Sbornik, No. 2) 2,500 copies printed.	
Ed.: B.V. Anisimov, Candidate of Technical Sciences; Tech. Eds.: B.I. Medel' and A.P. Dvarovai; Managing Ed. for Literature on Machine Building and Instrument Construction: A.V. Pokrovskiy, Engineer.	
PREFACE: This book may be useful to aspirants and other students specializing in computer technology, and also to designers and engineering and technical personnel who make use of electronic computers.	
School Ieni Bauman) in honor of the 40th anniversary of the October Revolution. The articles contained in the collection deal with experimental studies on the performance of various components of electronic computers. The topics discussed are program storage, control devices, the connection between the parameters of an algorithm and the machine, etc. The application of these components to the control of technological processes is also discussed. Authors: B.V. Anisimov, M.V. Gaid, and V.M. Golubkin, Candidate of Technical Sciences. Analysis of the Quality of Service Systems With Discrete Element	32
Bobrov, Ye.V., Engineer. The Effect of Block Diagram Parameters on the Performance Quality of a Tubeless Direct Current Operational Amplifier	46
Anisimov, B.V., Candidate of Technical Sciences, V.M. Golubkin, Candidate of Technical Sciences, and Yu.M. Deychenko, Engineer. Device for Transforming and Recording of a Program	56
Trubnikov, M.V. Candidate of Technical Sciences, and Ye.I. Melnikov, Engineer. Certain Principles of Constructing Local Control by External Memory Devices	21
Vlasenko, Y.I., Candidate of Technical Sciences, G.I. Zhidkov, Engineer, A.M. Desnitskiy, Engineer, and I.M. Anisimov, Engineer. Method of Forming the Images of Numbers by Means of a Ferrite Matrix	64
Shreyder, Yu.A., Candidate of Physical and Mathematical Sciences. The Connection Between the Parameters of an Algorithm and of a Machine	70
Anisimov, B.V., Candidate of Technical Sciences, V.M. Golubkin, Candidate of Technical Sciences, and A.Ya. Savel'yev, Engineer. Device for the Control of Recording of Information on Magnetic Tape	75
Vasil'yev, G.E., Engineer. Analysis of Certain Relationships for an Economical Selection of the Dimensions of a Magnetic Drum	81
Anisimov, B.V., Candidate of Technical Sciences, and Yu.V. Vinogradov, Engineer. On the Problem of the Accuracy of the Representation of Continuously Varying Values in a Numerical Code	86
Shreyder, Yu.A., Candidate of Physical and Mathematical Sciences. Solution of Boundary Value Problems by the Method of Polynomial Approximations	95
Markov, G.Ye., Engineer. Certain Considerations on the Preventive Control of Electronic Computers	99
M.S. Saplin, Engineer. Photoelectric Device Which Receives Printed Numerical Signs	108
Palashevskiy, A.M., Engineer. Analysis of Information Storage Components of Computers	121
Chetverikov, V.N., Candidate of Technical Sciences. Relay Integrating Drive With Electromagnetic Powder Clutch	130
Kalashnikov, V.A., Engineer. Certain Algorithms for the Rational Planning of Production	142
Ruznetskov, M.M., Candidate of Technical Sciences. Circuit Mechanisms for Programmed Control	149

9(6)

SOV/119-59-2-5/17

AUTHOR:

Dobrov, Ye. V.

TITLE:

Modulator With Photoresistances for D. C. Operation Amplifiers
With Semiconductor Triodes (Modulyator s fotosoprotivleniyami
dlya operatsionnogo usilitelya postoyannogo toka na polupro-
vodnikovyykh triodakh)

PERIODICAL:

Priborostroyeniye, 1959, Nr 2, pp 12-16 (USSR)

ABSTRACT:

2 modulators (single contact and two contact modulators) with
sulfur-lead-photoresistances built of junction germanium
triodes are investigated for finding out if they may be coupled
with an operational d. c. amplifier.

The modulator is a divider consisting of 2 lines. One or both
of the lines are developed as photoresistances. In the latter
case, the light impulses fall one after the other on the photo-
resistance of the divider. As photoresistances, such of the
type FS-A1 of a dark resistance of 30 to 600 k Ω were used.
When testing the stability of the photo modulators the value
of the photo emf was found not to exceed 200 μ V and to remain
unchanged with time. The temperature dependence of the photo
emf was tested within the range of from 25-65°C. It was de-

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SOV/119-59-2-5/17

Modulator With Photoresistances for D. C. Operation Amplifiers With Semiconductor Triodes

tected that initially the photo emf increases on the average by 10% but then decreases monotonously. At 65°C, its value amounts to about 50% of the initial one.

The most difficult problem in the development of a modulator with photoresistances is providing a light flux that is modulated with regard to intensity by a sufficiently high frequency. A mechanic interruptor is used. This is a thin rotating aluminium disk (diameter 110 mm) equipped with 20 holes distributed symmetrically on the periphery. The rotary disk is mounted between the photo resistances and the light source. The disk rotation is effected by means of a synchronous motor type GChN-021/8 supplied by a three-phase network of 40 V, 500 cycles attaining a speed of 7500 revs.p.m. The interruptor employs 10 photoresistances, type FS-A1, in total. The lamp type A-7 with elliptic reflector is used as light source. In order to prove the usability of the photomodulator in connection with a semiconductor operational d. c. amplifier a test model was prepared. The amplifier is illustrated by a basic circuit diagram and by a photograph. The essential data of the amplifier are : amplification factor in the high

Card 2/3

SOV/119-59-2-5/17

Modulator With Photoresistances for D. C. Operation Amplifiers With Semiconductor Triodes

frequency part 400-600, input resistance 100 k Ω . The input resistance of the repeater amounts to 100-150 k Ω . The amplifier background noise level lies beneath 30-50 μ V. The amplification factor of the low-frequency part varies between 350 and 700 as a function of the parameters of the employed triodes. The transmissivity of the low-frequency part is good for frequencies between 50 and 70 cycles.

The drift was determined for both the modulator and the total apparatus. The single values are given in a table. In conclusion one may say: Modulators with sulfur-lead-photoresistances, type FS-A can well be used for work with little d. c. signals (up to a few mV). The input resistance can be made sufficiently high (300 to 400 k Ω) for d. c. signals. The drift level of the modulators can for a working period of 8 hours be given with 20 μ V. The satisfying operation of the test model shows that modulators with photoresistances can be used in connection with an operational d. c. amplifier that is entirely composed of crystal triodes. There are 6 figures, 1 table, and 9 references, 5 of which are Soviet.

Card 3/3

DOBROV, Ye.V., inzh.

Effect of the parameters of a block circuit on the operational
characteristics of a tubeless d.c. amplifier. [Trudy]
MVTU no.2:46-55 '59. (MIRA 13:5)
(Magnetic amplifiers)
(Transistor amplifiers)

L 42039-65 EWT(1)/EWA(h) Feb

UJ/0286/65/000 1007/0133/0133

ACCESSION NR. AP5010962

AUTHORS: Dobrynin, I. I., But, I. I.

TITLE: Multiplier-divider device. Class 42, No. 16,683

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965.

TOPIC TAGS: multiplier circuit, divider circuit, Hall device

ABSTRACT: The device presents a multiplier-divider device made of a Hall element, a Hall element, and a Hall element.

The diagram shows the circuit diagram of the device.

APP. 1. The device is a multiplier-divider device made of a Hall element, a Hall element, and a Hall element.

SUBMITTED: 03sep65

ENCL: 01

NO REF SOV: 000

OTHER: 000

Cord 1/2

112039-65

ENCLOSURE: 01

ACCESSION NR: AP5010952

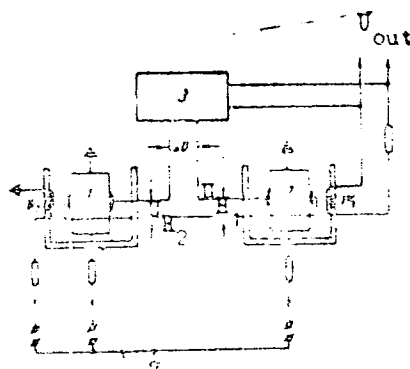


Fig. 1. Multiplier-divider device
1 and 2 - Hall emf detectors; 3 - amplifier

Card 2/2 out

DOBROV, Yu.V.; KOLODIY, V.V.; GIRDYUK, O.P.

Formation waters of the Nebit-Dag field. Izv.AN Turk.SSR no.6:
98-102 '59. (MIRA 13:5)

1. Institut geologii AN Turkmenkoy SSR.Turkmenkiy filial
Vsesoyuznogo neftegazovogo nauchno-issledovatel'skogo instituta.
(Nebit Dag region--Oil field brines)

GEODEKLIAN, Artem Aramovich; DENISEVICH, Vladimir Vladimirovich;
ANTSIFOROV, Aleksandr Ivanovich; BORSHCHEVSKIY, Gol'dfrid
Adol'fovich; VIKTOROV, Dmitriy Nikolayevich; NIKOLENKO,
Vladimir Antonovich; STROGANOV, Vladimir Aleksandrovich;
ULIZLO, Boris Mikhaylovich; USHKO, Konstantin Aleksandrovich;
Prinimali uchastiye: DZHIBUTI, S.S.; DOBROV, Yu.V.; KORABEL'NIKOV,
M.A.; SAMSONOV, L.G.; SABBATOVSKIY, G.A.; CHERNYSHEVA, A.A.;
SHNEIDER, G.F.; BROD, I.O., otv.red.; PERSHINA, Ye.G., red.isd-va;
KOVAL'SKAYA, I.F., tekhn.red.

[Geology and oil and gas potentials of uplifts in the Balkhan
region] Geologicheskoe stroenie i neftegazonosnost' Pribalkhanskoi
zony podniiatii. Moskva, Izd-vo Akad.nauk SSSR, 1960. 107 p.

(MIRA 14:2)

(Balkhan Range--Petroleum geology)

(Balkhan Range--Gas, Natural--Geology)

DOBROV, YU. V., CAND GEOL-MINER SCI, ^{re-}GEOCHEMICAL ~~ON-~~
Culicrites
~~FACTERISTICS~~ OF WATERS BENEATH THE PETROLEUM LEVEL IN
SOUTHWESTERN TURKMENIYA AND THEIR SIGNIFICANCE IN FORE-
CASTING ITS PETROLEUM-BEARING POTENTIAL. MOSCOW, 1961.
(MOSCOW ORDER OF LENIN AND URDER OF LABOR RED BANNER
STATE UNIV IN M. V. LOMONOSOV). (KL, 2-61, 202).

S/056/63/044/001/008/067
B108/B180

AUTHORS: Korotkov, K. A., Kabachenko, A. P., Lysikov, Yu. A., Dobrov,
Yu. V.

TITLE: Internal bremsstrahlung which accompanies the β -decay of Ca^{45}

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44,
no. 1, 1963, 45 - 47

TEXT: The bremsstrahlung was measured at 40 - 215 kev on a single-channel scintillation spectrometer with an NaI(Tl) crystal in an aluminum container. The Ca^{45} beta sources were prepared from a solution of calcium chloride and powdered CaCO_3 applied to and covered by a methacrylate film of 0.1 mg/cm^2 . The sources were kept at a pressure of 1 mm Hg. The spectrum was compared with that calculated according to the theory of J. K. Knipp and G. E. Uhlenbeck (Physica, 3, 425, 1936) and P. Bloch (Phys. Rev., 50, 272, 1936). At low energies (60 - 130 kev) both curves agree very well, but at higher energies the discrepancy is considerable (35 % at 215 kev) and cannot be eliminated by taking the Coulomb effect into consideration. There is 1 figure.

Card 1/2

Internal bremsstrahlung which ...

S/056/63/044/001/008/067
B108/B180

ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State University)

SUBMITTED: July 1, 1962

✓

Card 2/2

DOBROV, Zh.

His vacuum cleaner washes too. Izobr. i rats. no.11:16 '63.
(MIRA 16:12)

1. Luganskiy teplovozostroitel'nyy zavod.

GULINOVA, L. [Hulinova, L.], kand.tekhn.nauk; BOGDANOVICH, G. [Bohdanovych, H.],
inzh.; DOBROVA, A., ~~inzh.~~; TORCHINSKAYA, S. [Torchyns'ka S.], inzh.

Causes of the deformation of gypsum concrete slabs manufactured by the
rolling method. Bud. mat. i konstr. 4 no.1:39-40 Ja-F '62.

(MIRA 15:7)

(Concrete slabs)

DOEROVA, A.M.

Use of diadynamic therapy in diseases of the arterial vessels of the extremities. Sov.med. 28 no.7:98-100 71 '88.

(MIRA 18:8)

1. Kurs fizioterapii (zav. - prof. Ye.I.Fasynkov) i kafedra obshchey khirurgii pediatricheskogo fakul'teta (zav. - prof. G.P.Zaytsev) II Moskovskogo meditsinskogo instituta imeni N.I.Pirogova.